

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of  
KARS-MICHIEL H. LENSSEN  
SERIAL NO.: 09/108,643  
FILED: July 1, 1998  
INPUT DEVICE



Atty. Docket

PHN 16,435

GROUP ART UNIT: 2673

EXAMINER: D. Lewis

#11  
Butt

Commissioner for Patents  
Washington, D.C. 20231

Sir:

RESPONSE UNDER 37 C.F.R. 1.116

This is in response to the Office Action mailed January 2001, in which the Examiner rejected claims 6, 8-10, 14 and 15 under 35 U.S.C. 112, paragraph 1; claims 1, 3-6 and 8-10 under 35 U.S.C. 102(a) as being anticipated by U.S. Patent 5,991,085 to Rallison et al.; and claims 11-15 under 35 U.S.C. 103(a) as being unpatentable over Rallison et al.

Applicant traverses the above rejections and offers the following explanation.

Claim 6 recites "first calculation means for calculating a first signal X..." and "second calculation means for calculating a second signal Y..." In the specification on page 9, lines 20-21 (describing Fig. 3), it is stated "The input device further comprises calculation means for calculating the X-signal and the Y-signal..." Applicant submits that while the specification may

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describe a single device for performing two different tasks (which may be a preferred, or best, mode for performing the tasks), there is nothing in the Patent Law or Rules that would prevent Applicant from claiming the same as two separate means + function clauses.

Applicant therefore believes that the recitation of "second means for calculating the second signal Y" is not new subject matter.

In view of the above, Applicant believes that the Examiner's 35 U.S.C. 112, paragraph 1 rejection should be withdrawn.

The subject invention relates to method of and an input device for moving a graphic element, e.g., a cursor, on a display. The method includes measuring a plurality of components of a magnetic field, e.g., the value of the magnetic fields along the 3 axes in a 3-orthogonal-axis system, and controlling the position of the graphical element based on these plurality of components. To this end, two of the components are used to calculate one signal X relating to the movement of the graphical element in a first direction (e.g., horizontal) on the display, and two of the components, one of which is different from the two components used to calculate the signal X, are used to calculate another signal Y relating to the movement of the graphical element in a second direction (e.g., vertical) on the display.

The Rallison et al. discloses a head-mounted personal visual display apparatus with image generator and holder in which, at col. 19, lines 14-23, it is stated "In one embodiment described more thoroughly below, the tracker combines a 3-axis magnetic sensing system and a 2-axis gravimetric sensing system to calculate angles for pitch, roll and yaw. As used herein, "pitch" refers to rotation or pivoting of the head in a medial axis or plane (a nodding motion), "roll" refers to rotation of the head in a lateral plane (e.g. leaning the left ear toward the left shoulder), and "yaw" refers to rotation about the spinal axis (generally corresponding to compass heading when the user is generally upright)." While this would cover all movements of the apparatus, this passage does not identify which of the sensing systems detect which movements. However, at col. 5, lines 13-16, it is stated "In one particular embodiment, three pairs of orthogonally-mounted magnetoresistive sensors, each pair forming two legs of one of three Wheatstone bridges provide yaw detection."

On page 7 of the Office Action, the Examiner appears to acknowledge the above. However, the Examiner then states "Each pair of sensors are located on independent X, Y and Z axis. The first signal of the yaw detection is comprised of the sensor pair for the X direction, and a second signal of the yaw detection is comprised of the sensor pair for the Y direction."

So far, Applicant believes that the Examiner is correct in his analysis. But, Applicant submits that the Examiner's analysis is incomplete with respect to the subject invention. In particular, in order to determine "yaw", a third signal is needed and is derived from the sensor pair for the Z direction. These three signals are then used to determine "yaw", i.e., rotation of the head about the spinal axis. To this end, the apparatus in Rallison et al., if the Z direction is colinear with the spinal axis, then probably the measured component in the Z direction is used to correct the measured components the X and Y directions (e.g., if the wearer of the apparatus is holding his/her head in a downward or upward position). In any event, the measured components of the magnetic field are only used to determine "yaw".

In the subject invention, on the other hand, the first signal X and the second signal Y relate to the positioning of the graphic element on the display. The first and second signals X and Y, relating to the positioning of the graphic element on the display, are determined from the components of the magnetic field in the X, Y and Z directions with respect to the input device.

Applicant submits that if one were to use the magnetoresistive system of Rallison et al., then, all three components of the magnetic field would be used to determine "yaw" which would correspond only to the first signal X. The second


signal Y would then be determined using the gravimetric system which measures pitch and roll (as defined above).

The subject invention uses two of the measured components of the magnetic field, e.g., Z and X, to determine the first signal X, relating to a translation of the graphic element in a first direction on the display, and two of the measured components of the magnetic field, e.g., Z and Y, to determine the second signal Y, relating to a translation of the graphic element in a second direction on the display.

Applicant believes that this is neither shown nor suggested by Rallison et al., and as such, is patentable thereover.

Applicant believes that this application, containing claims 1, 3-6 and 8-15, is now in condition for allowance and such action is respectfully requested.

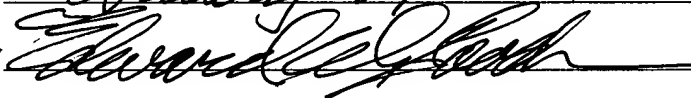
Respectfully submitted,

by   
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In re Application of  
KARS-MICHIEL H. LENSSEN

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Serial No.: 09/108,643

Group Art Unit: 2673

Filed: July 1, 1998

Examiner: D. Lewis

Title: INPUT DEVICE

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BOX AF

Sir:

Enclosed is an amendment in the above-identified application.

[ X ] No additional fee is required.

[ ] The fee has been calculated as shown below.

CLAIMS AS AMENDED				
	Claims remaining after amendment	Highest number previously paid for	Number extra	Rate
Total Claims	13 Minus	20 <sup>1</sup> =	X	\$18 =
Independent Claims	2 Minus	3 <sup>2</sup> =	X	\$80 =
Multiple Dependent Claims, if any. If not previously paid, \$270.				\$
Total Additional fee for this amendment				= \$

<sup>1</sup>If less than 20, enter 20. <sup>2</sup>If less than 3, enter 3.

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*Edward W. Goodman*  
Edward W. Goodman, Reg. 28,613  
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